MEMO

To: Michael Torres, Remedial Project Manager, United States Environmental Protection Agency

From: Scott Lindenmuth, Technical Coordinator, SBA Shipyard PRP Group

CC: Beth Hesse, Project Coordinator, SBA Shipyard PRP Group
Tommy Doran, Louisiana Department of Environmental Quality
I-Jung Chiang, United States Environmental Protection Agency
Blake Atkins, United States Environmental Protection Agency

Date: July 15, 2019

Re: Bi-Monthly Progress Report #5; May – June 2019
Remedial Investigation/Feasibility Study
SBA Shipyard Superfund Site, Jennings, Jefferson Parish, Louisiana
EPA ID: LAD008434185

EHS Support LLC ("EHS Support"), on behalf of the SBA Shipyard Potentially Responsible Party (PRP) Group (PRP Group), is providing this Bi-Monthly Progress Report associated with Remedial Investigation (RI) and Feasibility Study (FS) activities being conducted at the SBA Shipyard Superfund Site located in Jennings, Jefferson Davis Parish, Louisiana (Site). This progress report is being provided in accordance with the Administrative Settlement Agreement and Order on Consent for RI/FS Study (Settlement Agreement) between the United States Environmental Protection Agency (USEPA) and PRP Group Respondents dated October 25, 2016; amended March 7, 2018.

Description of Actions Taken to Comply with Settlement Agreement

Project Work Performed in May and June 2019

Actions taken during May and June 2019 to comply with the Settlement Agreement consisted of implementing activities described in the RI/FS Work Plan, dated May 17, 2018 (Work Plan) and approved by USEPA on July 19, 2018, field sampling activities, and other administrative tasks. Supplemental sampling activities recommended in the *Remedial Investigation Preliminary Site Characterization and Data Gap Assessment* (Tech Report), dated February 8, 2019, and discussed with USEPA on May 23, 2019 were also undertaken. The scope of supplemental sampling activities was augmented following submission of the Tech Report to further characterize Site conditions and potential risks to human and/or ecological receptors.

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Field Work

As noted in Bi-Monthly Progress Report #4, the third of four planned groundwater sampling events was completed between May 6 and May 9, 2019. Groundwater data collected during the May 2019 sampling event are being evaluated for quality control/quality assurance (QA/QC) protocols and undergoing data validation in accordance with the Quality Assurance Project Plan (QAPP). A summary table of preliminary sample results are provided in **Attachment 1** and should be considered draft, pending the results of data validation.

Supplemental soil, sediment, pore water, and surface water samples were collected between May 29 and June 6, 2019. Supplemental sampling activities, including samples for QA/QC purposes, were performed in accordance with the recommendations in the Tech Report. As mentioned above, the scope of supplemental sampling activities was augmented following submission of the Tech Report to further characterize Site conditions and potential risks to human and/or ecological receptors. Methods and procedures for sample collection were employed in accordance with the Work Plan, Field Safety Plan, QAPP, Project Plan, and project-specific Health and Safety Plan.

Additional details regarding the supplemental sampling activities are discussed in the following sections, which are organized by environmental media.

Supplemental Soil Sampling

A total of 32 soil samples (normal field samples) were collected between May 29 and May 31, 2019 from 18 soil borings to define the extent of polycyclic aromatic hydrocarbons (PAH) concentrations exceeding site-specific screening criteria. A total of 18 surface soil samples (**Figure 1**) and 14 sub-surface soil samples (**Figure 2**) were collected:

- Nine soil borings were advanced to collect soil samples from 0-1 foot below ground surface (ft bgs in accordance with the systematic sampling approach described in the Work Plan.
    - One sample, IAI-5-SS-0223 (0.0 – 1.0), was re-sampled on June 6, 2019 after the original sample jar broke at the laboratory.
- Nine soil borings were advanced to collect soil samples from 0-1 ft bgs and to depths up to 10 ft bgs in accordance with the judgmental sampling approach described in the Work Plan.
    - Nine surface soil samples were collected from 0-1 ft bgs;
    - 14 sub-surface soil samples were collected from 1-10 ft bgs; and
    - One additional soil boring (IAI-4-SS-0236) was added to further assess soil conditions in IAI-4 based on visual and olfactory observations noted by the field geologist at IAI-4-SS-0228.
- All soil samples were shipped overnight under chain-of-custody for laboratory analysis of PAHs by USEPA method SIM 8270D.

Supplemental Surface Water Sampling

A total of four supplemental surface water samples (normal field samples) were collected from a total of four locations, including three locations in IAI-1 (Southern Wetland) and one location in the Mermentau River just outside the berm separating the eastern end of IAC-5 (Barge Cleaning Area Drainage) from the River on June 3, 2019 (**Figure 3**). The October 2018 surface water sampling locations and results of the

human health screening evaluation for semi-volatile organic compounds (SVOCs) previously provided in the Tech Report are shown in **Figure 3** for reference. The supplemental surface water samples were shipped under chain-of-custody for laboratory analysis of PAHs, target list metals (total and dissolved fractions), and geochemical parameters (i.e., total suspended solids, total dissolved solids, total hardness, dissolved organic carbon, sulfate, chloride, and total alkalinity), as recommended in the Tech Report.

Supplemental Sediment and Pore Water Sampling

A total of 28 supplemental sediment samples (normal field samples) were collected from a total of 20 locations within nine on-site investigation areas between June 3 and 6, 2019 (**Figures 4** and **5**). The purpose of the supplemental sediment sampling was to:

- Characterize sediment conditions within Former Water Pit 3 in IAC-3 (Barge Cleaning Surface Impoundments), which was not sampled in October 2018 due to access constraints;
- Refine the extent of PAH concentrations exceeding human health screening criteria in IAI-1 (Southern Wetland); and
- Further evaluate potential direct contact toxicity of PAHs to benthic invertebrate receptors at a subset of locations where equilibrium-partitioning sediment benchmark toxic units (∑ESBTUs) exceeded a value of one, indicating the need for further assessment.

A total of five supplemental sediment samples (normal field samples) were collected from a total of three locations within Former Water Pit 3 in IAC-3 (Barge Cleaning Surface Impoundments) to characterize sediment conditions (**Figure 4**). The October 2018 sediment sampling locations and results of the human health screening evaluation for SVOCs in surface sediment previously provided in the Tech Report are shown in **Figure 4** for reference. The supplemental sediment samples collected in June 2019 to characterize sediment conditions in Former Water Pit 3 in IAC-3 included:

- Three surface samples (0.0-0.5 ft depth interval); and
- Two sub-surface samples (0.5-1.0 ft depth interval).

Manual coring equipment could not be advanced to the proposed maximum depth in order to sample all sub-surface sediment intervals, mainly in the 1.0-3.0 ft depth interval, due to refusal and logistical constraints associated with physical access limitations of Former Water Pit 3. However, this issue is not anticipated to be a major limitation to achieve the objective of charactering sediment conditions in Former Water Pit 3.

Supplemental sediment samples from Former Water Pit 3 in IAC-3 were shipped under chain-of-custody for laboratory analysis. Surface sediments were analyzed for PAHs, target list metals, acid volatile sulfide-simultaneously extractable metals (AVS-SEM), volatile organic compounds (VOCs), bulk density, pH, moisture, grain size, and total organic carbon (TOC). Sub-surface sediments were analyzed for PAHs and target list metals in accordance with the Work Plan.

A total of nine supplemental sediment samples (normal field samples) were collected from a total of three locations within IAI-1 (Southern Wetland) to refine the extent of PAH concentrations exceeding human health screening criteria. The October 2018 sediment sampling locations and results of the human health screening evaluation for SVOCs in surface sediment previously provided in the Tech

Report are shown in **Figure 4** for reference. The June 2019 supplemental sediment samples collected in IAI-1 included:

- Three surface samples (0.0-0.5 ft depth interval); and
- Six sub-surface samples (0.5-3.0 ft depth interval).

These supplemental samples were shipped under chain-of-custody for laboratory analysis. Surface sediments were analyzed for PAHs and TOC. Sub-surface sediments were analyzed for PAHs. Sampling location IAI-1-SD-0062 was sampled both to refine the extent of PAH concentrations exceeding human health criteria and to further evaluate potential direct contact toxicity of PAHs to benthic invertebrate receptors. Therefore, surface sediment from this location was submitted for analysis of the more comprehensive suite of PAHs described below.

A total of 15 supplemental surface sediment samples (normal field samples) were collected from a total of 15 locations from multiple on-site investigation areas to further evaluate potential direct contact toxicity of PAHs to benthic invertebrate receptors. The October 2018 sediment sampling locations and results of the ESBTU evaluation for PAHs in surface sediment previously provided in the Tech Report are shown in **Figure 5** for reference.

These supplemental samples were shipped under chain-of-custody and analyzed for PAHs in sediment (8270 Mod, NOAA 34 PAH), PAHs in pore water extracted from sediment (ASTM D7363-13), and TOC. ASTM D7363-13 is a method for determination of parent and alkyl polycyclic aromatics (24 PAHs) in sediment pore water using solid-phase microextraction (SPME) and gas chromatography/mass spectrometry in selected ion monitoring mode. This method directly determines the concentrations of dissolved PAH concentrations in sediment pore water and is important from an environmental regulatory perspective because it can achieve the analytical sensitivities to meet the goals of the USEPA narcosis model for protecting benthic organisms in sediments potentially impacted by PAHs.

Sample Summary from May/June 2019 Supplemental Sampling Activities

Total sample counts by media collected during supplemental RI fieldwork are provided in the following table:

Analysis	Soil	Sediment	Pore Water	Surface Water
PAHs - 8270D SIM	32	13	-	4
PAHs - 8270D SIM (NOAA 34 PAHs)	-	15	-	-
PAHs - SPME 24 PAHs	-	-	15	-
Metals	-	5		4
Volatile Organic Compounds (VOCs)	-	3	-	-
Acid Volatile Sulfide / Simultaneously Extracted Metals (AVS/SEM)	-	3	-	-

Geochemical / Physical Property Analyses[1]	-	20*	-	4
Totals (distinct sample IDs)	32	59	15	12

Notes:
1 - See RI/FS Work Plan for geochemical and physical property analyses for each media type.
* - Grain size, ORP, and pH were only analyzed for surface sediment samples from Former Water Pit 3 in IAC-3. TOC was analyzed for all surface sediment samples.

Analytical Data Validation and Evaluation

As noted above, the groundwater sample results from the May 2019 sampling event are currently undergoing QA/QC and data validation procedures in accordance with the QAPP.

Field work data processing for the supplemental soil, sediment, pore water, and surface water sampling was initiated in June. Data validation and subsequent evaluations will be completed in accordance with the QAPP.

Document Submittal

The fourth bi-monthly progress report, which described activities completed in March and April 2019, was submitted to USEPA and LDEQ on May 15, 2019.

Project Management, Communication and Reports

As noted in the fourth bi-monthly progress report, a community meeting was held on May 9, 2019 in Jennings, Louisiana. Representatives from USEPA, LDEQ, Louisiana Health Department, EHS Support, and members of the public attended this meeting.

Results of Sampling and Tests

A preliminary summary of the groundwater sample results from May 2019 is provided as **Attachment 1**. Sample concentrations were similar to the results from the first and second quarterly sampling events completed in October-November 2018 and February 2019. The next groundwater sampling event (final of four planned events) is planned for early-August 2019.

Supplemental soil, sediment, pore water, and surface water will be provided in future technical reports following completion of data validation and evaluation in accordance with the QAPP.

Description of Work Planned for Next Two Months

As noted in the fourth bi-monthly progress report, EHS Support has begun preparing the Screening Level Ecological Risk Assessment (SLERA) and Work Plan for Human Health Risk Assessment documents using

information collected during the fall 2018 field work. Forthcoming data collected during the May-June 2019 field work will also be incorporated into these documents.

Additional work planned for July and August will consist of the following:

- QA/QC and data validation for soil, sediment, pore water, and surface water samples collected in May and June will be performed in accordance with the QAPP.
- The next quarterly groundwater sampling event will be completed in August 2019.

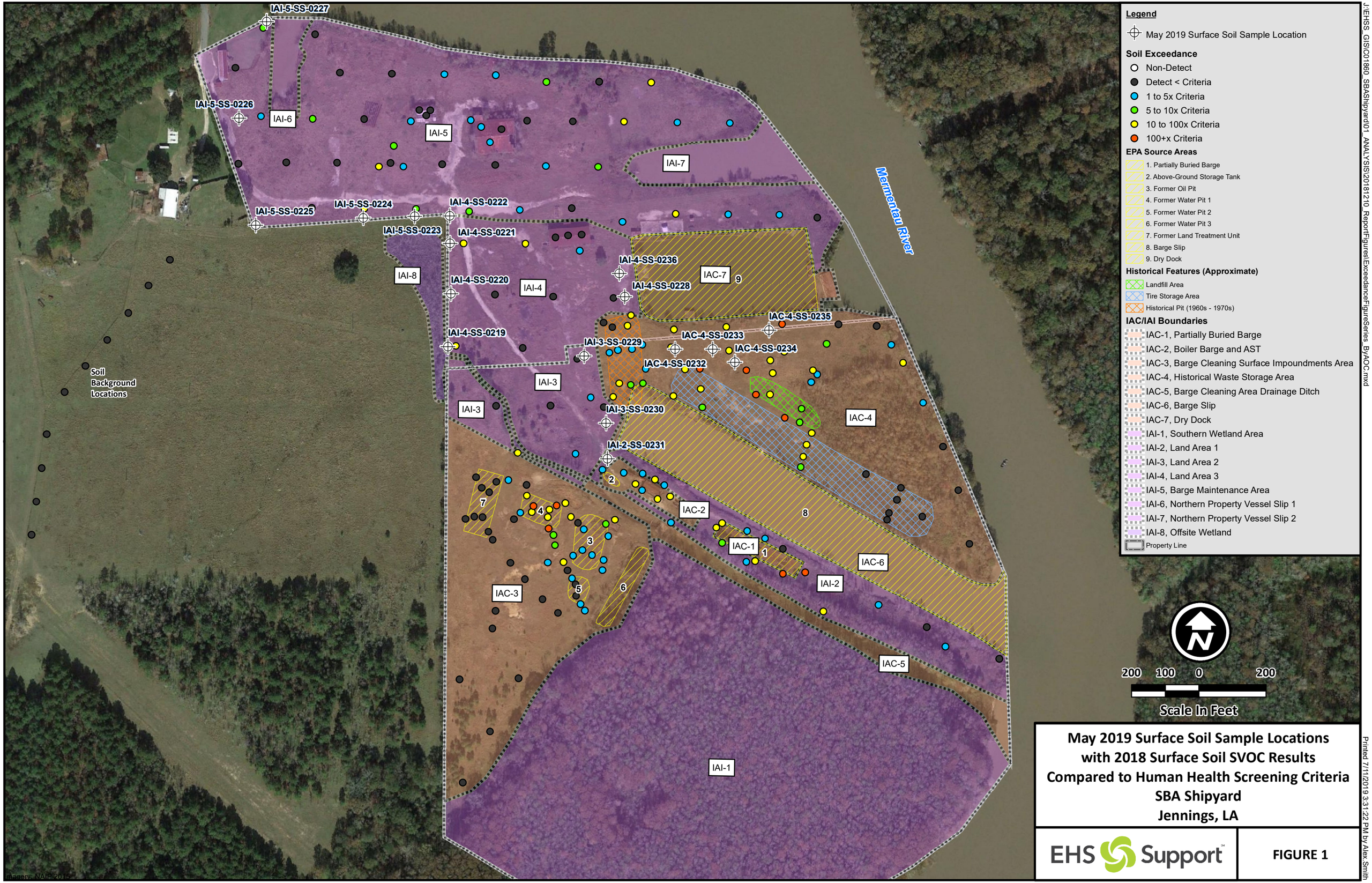
Problems Encountered/Anticipated Delays

Consistent with the previous sampling event, monitoring well MW-7 was not sampled during the May quarterly sampling event. A thin sheen (<0.01 feet) of light non-aqueous phase liquid (LNAPL) was detected in the well upon arrival. In accordance with the Work Plan, a sample was not collected due to the detection of LNAPL in the well. The well will continue to be monitored during future events to determine if LNAPL continues to be present.

The May and June 2019 supplemental sampling activities were completed in general accordance with the Work Plan. However, for sediment sampling in Former Water Pit 3 in IAC-3, manual coring equipment could not be advanced to the proposed maximum depth in order to sample all sub-surface sediment intervals, mainly the 1.0-3.0 ft depth interval, due to refusal and logistical constraints associated with physical access limitations.

Please call Scott Lindenmuth at (312) 882-3705 or Beth Hesse at (828) 551-9067 if you have any questions regarding this progress report.

Figures



Legend

May 2019 Surface Soil Sample Location

Soil Exceedance

- Non-Detect
- Detect < Criteria
- 1 to 5x Criteria
- 5 to 10x Criteria
- 10 to 100x Criteria
- 100+x Criteria

EPA Source Areas

- 1. Partially Buried Barge
- 2. Above-Ground Storage Tank
- 3. Former Oil Pit
- 4. Former Water Pit 1
- 5. Former Water Pit 2
- 6. Former Water Pit 3
- 7. Former Land Treatment Unit
- 8. Barge Slip
- 9. Dry Dock

Historical Features (Approximate)

- Landfill Area
- Tire Storage Area
- Historical Pit (1960s - 1970s)

IAC/IAI Boundaries

- IAC-1, Partially Buried Barge
- IAC-2, Boiler Barge and AST
- IAC-3, Barge Cleaning Surface Impoundments Area
- IAC-4, Historical Waste Storage Area
- IAC-5, Barge Cleaning Area Drainage Ditch
- IAC-6, Barge Slip
- IAC-7, Dry Dock
- IAI-1, Southern Wetland Area
- IAI-2, Land Area 1
- IAI-3, Land Area 2
- IAI-4, Land Area 3
- IAI-5, Barge Maintenance Area
- IAI-6, Northern Property Vessel Slip 1
- IAI-7, Northern Property Vessel Slip 2
- IAI-8, Offsite Wetland
- Property Line

May 2019 Surface Soil Sample Locations with 2018 Surface Soil SVOC Results Compared to Human Health Screening Criteria SBA Shipyard Jennings, LA

EHS Support

FIGURE 1

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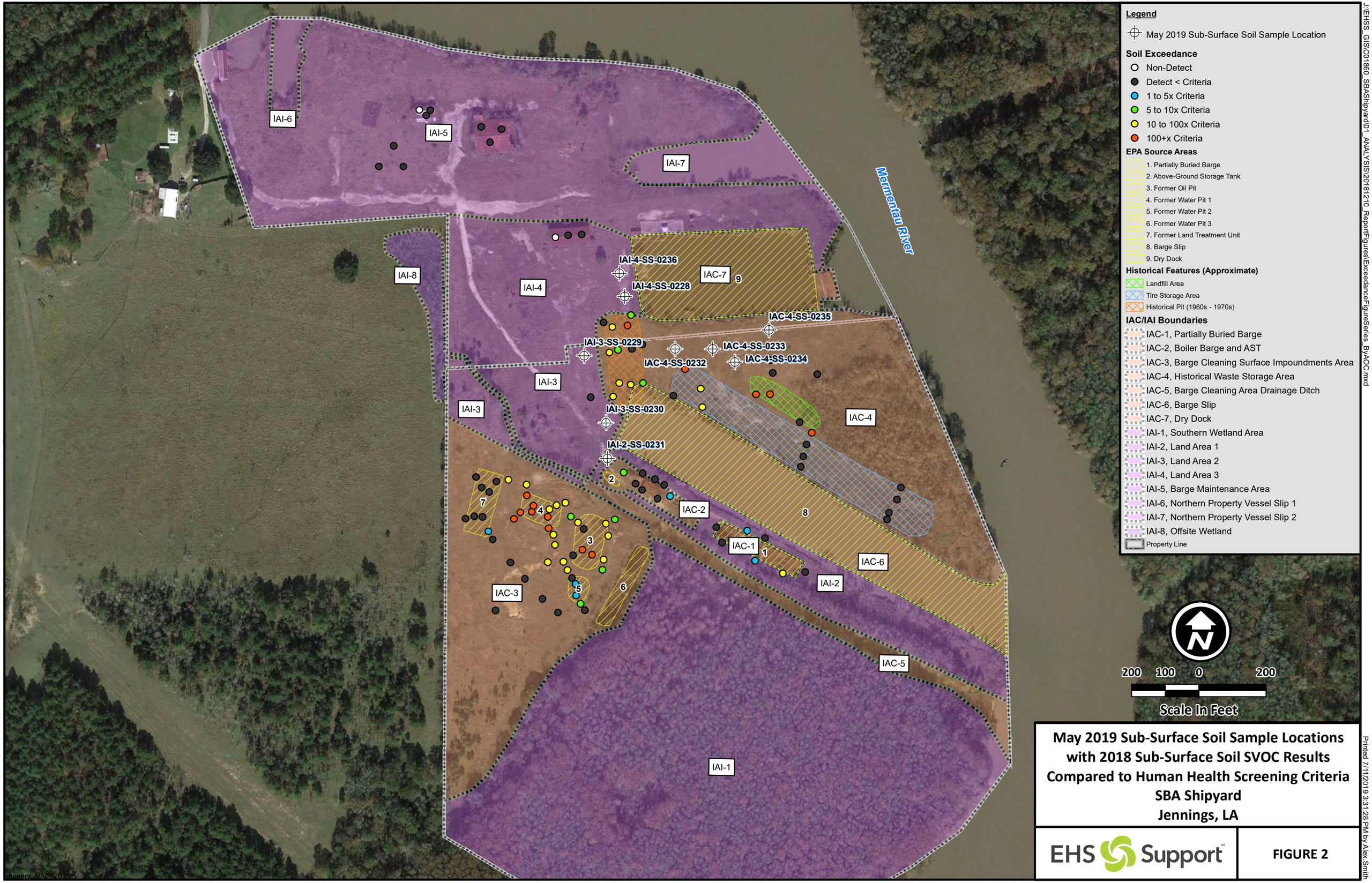

May 2019 Sub-Surface Soil Sample Locations with 2018 Sub-Surface Soil SVOC Results Compared to Human Health Screening Criteria
SBA Shipyard
Jennings, LA

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FIGURE 2

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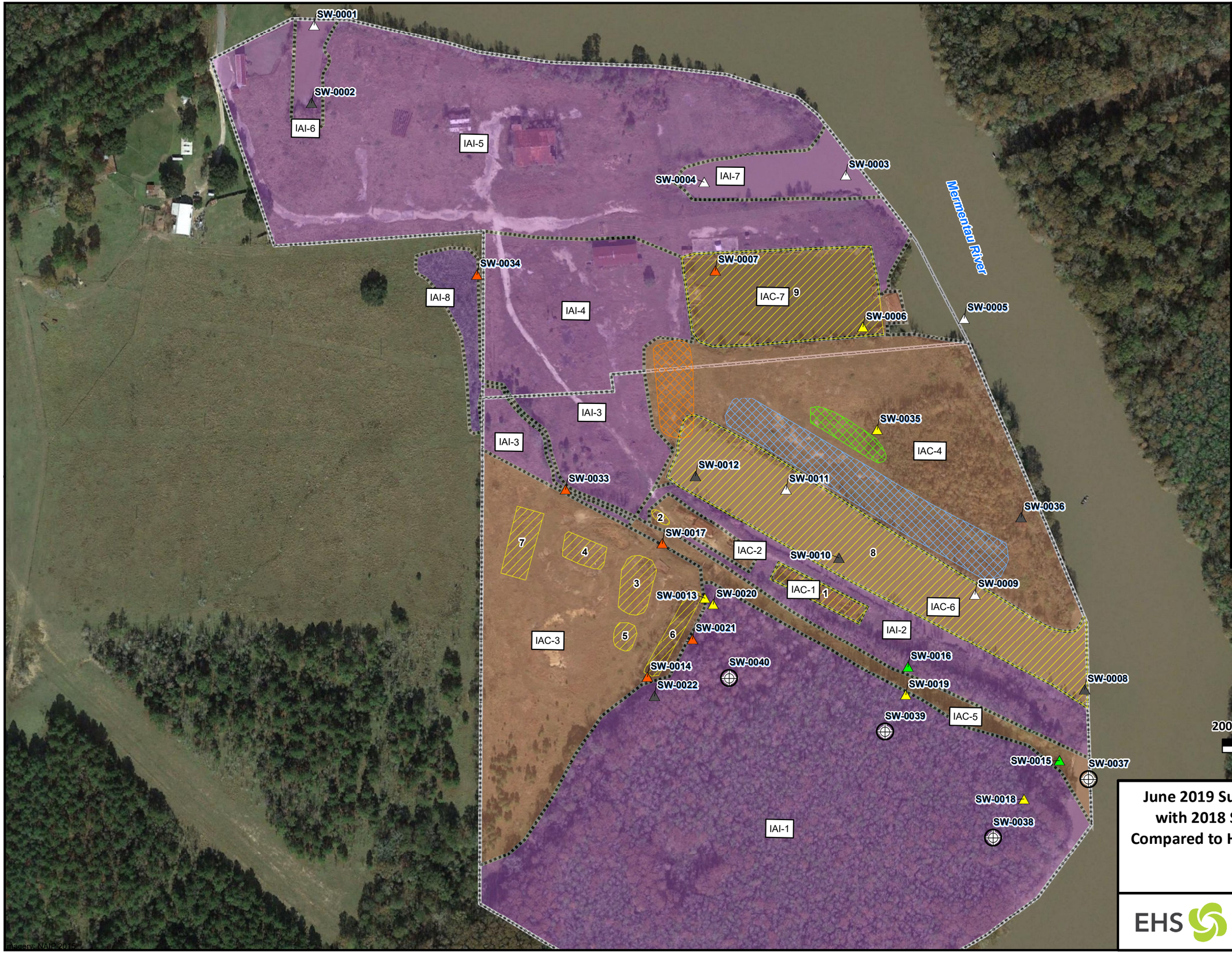

June 2019 Surface Water Sample Locations with 2018 Surface Water SVOCs Results Compared to Human Health Screening Criteria
SBA Shipyard
Jennings, LA

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FIGURE 3

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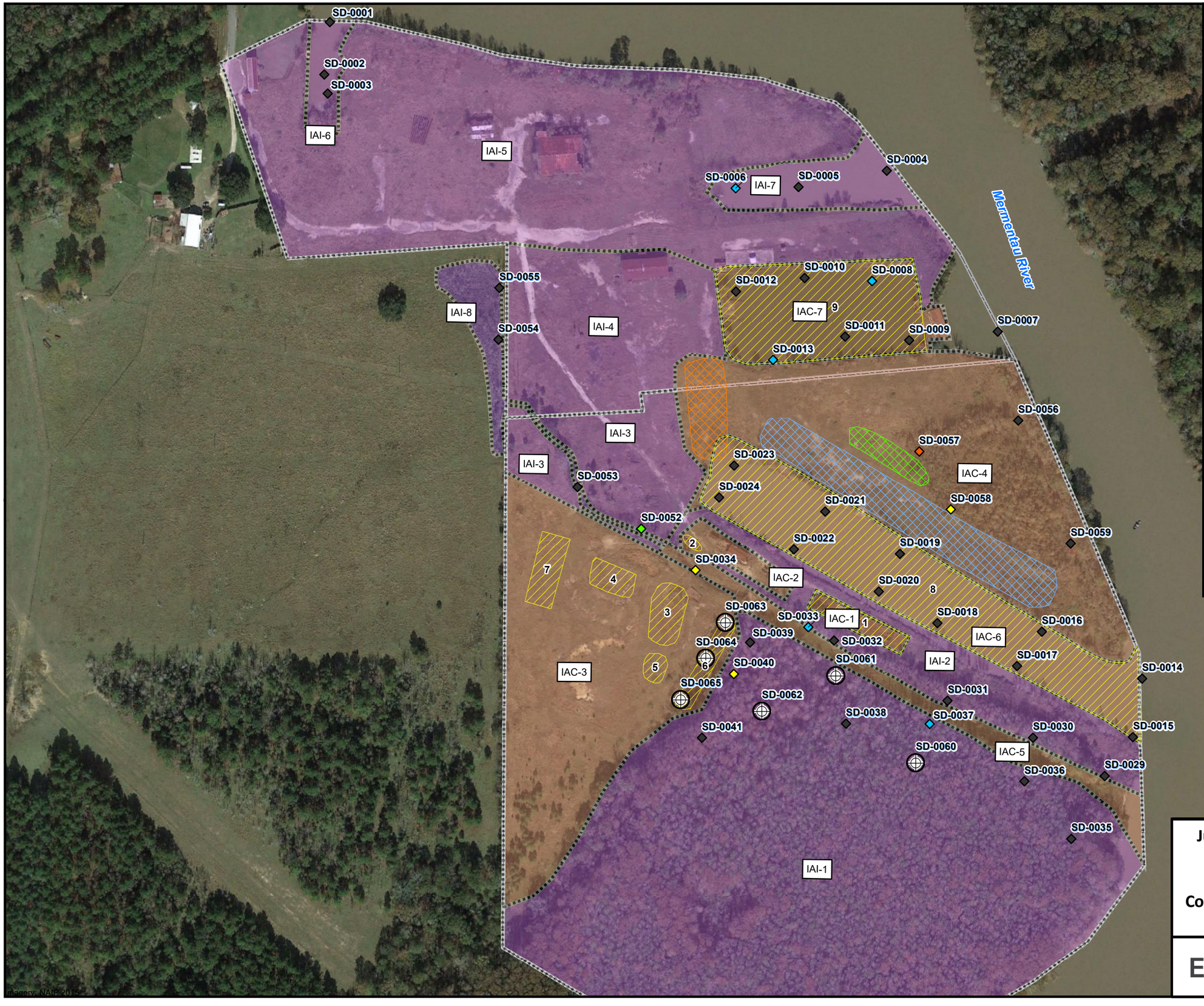

Legend

June 2019 Sediment Sample Location for Further Site Characterization

Sediment Exceedance

- Detect < Criteria
- 1 to 5x Criteria
- 5 to 10x Criteria
- 10 to 100x Criteria
- 100+x Criteria

EPA Source Areas

- 1. Partially Buried Barge
- 2. Above-Ground Storage
- 3. Former Oil Pit
- 4. Former Water Pit 1
- 5. Former Water Pit 2
- 6. Former Water Pit 3
- 7. Former Land Treatment Unit
- 8. Barge Slip
- 9. Dry Dock

Historical Features (Approximate)

- Landfill Area
- Tire Storage Area
- Historical Pit (1960s - 1970s)

IAC/IAI Boundaries

- IAC-1, Partially Buried Barge
- IAC-2, Boiler Barge and AST
- IAC-3, Barge Cleaning Surface Impoundments
- IAC-4, Historical Waste Storage
- IAC-5, Barge Cleaning Area Drainage
- IAC-6, Barge Slip
- IAC-7, Dry Dock
- IAI-1, Southern Wetland
- IAI-2, Land Area 1
- IAI-3, Land Area 2
- IAI-4, Land Area 3
- IAI-5, Barge Maintenance
- IAI-6, Northern Property Vessel Slip 1
- IAI-7, Northern Property Vessel Slip 2
- IAI-8, Offsite Wetland
- Property Line

N

200 100 0 200

Scale In Feet

June 2019 Sediment Sample Locations with 2018 Surface Sediment (0.0-0.5 ft) SVOCs Results Compared to Human Health Screening Criteria SBA Shipyard Jennings, LA

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FIGURE 4

Imagery: NAIP 2015

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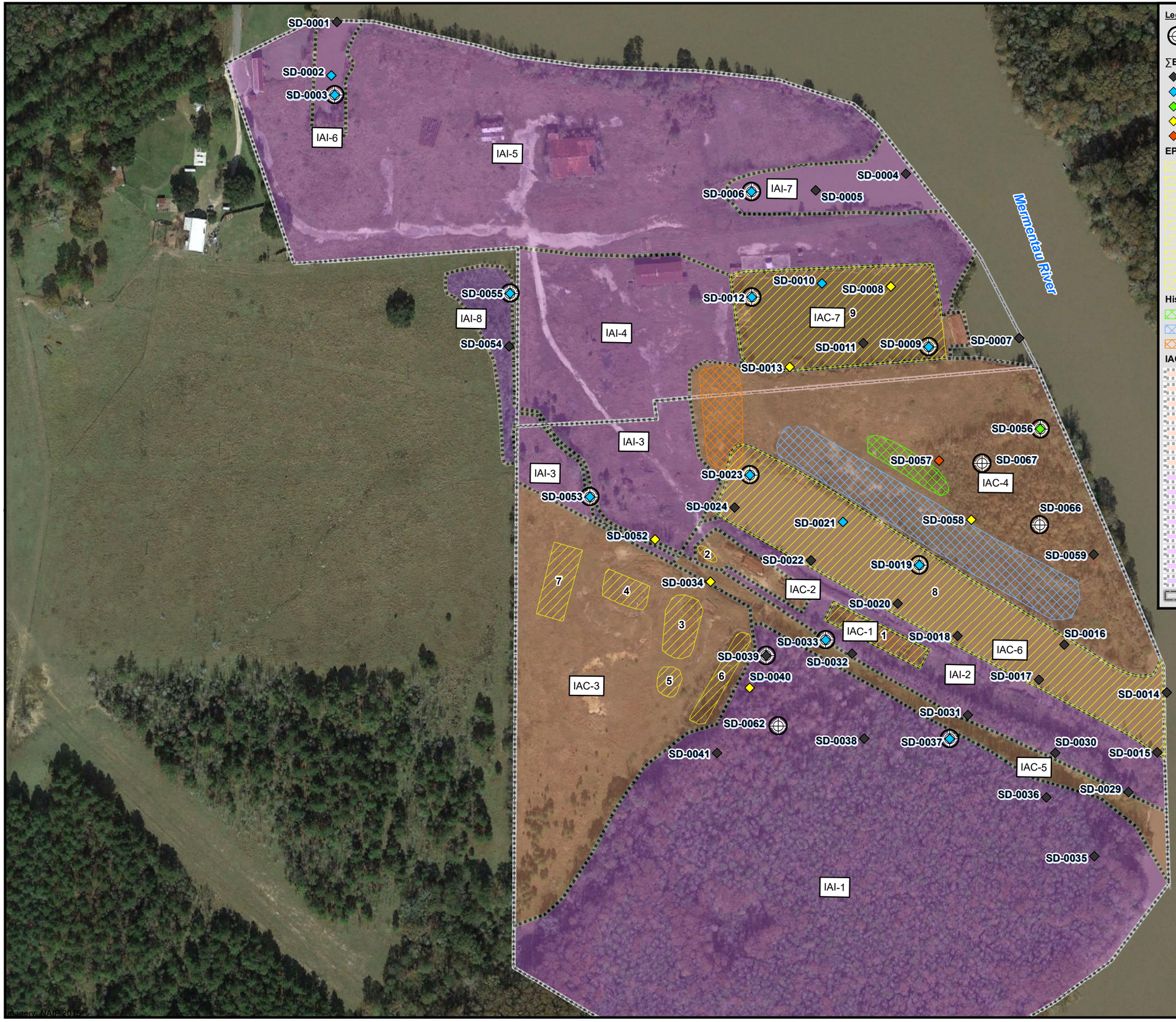

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June 2019 Co-Located Sediment/Pore Water Sample Location for Further PAH Analysis

$\sum$ESBTU$_{FCV,34}$

- < 1
- 1 - 5
- 5 - 10
- 10 - 100
- > 100

EPA Source Areas

- 1. Partially Buried Barge
- 2. Above-Ground Storage
- 3. Former Oil Pit
- 4. Former Water Pit 1
- 5. Former Water Pit 2
- 6. Former Water Pit 3
- 7. Former Land Treatment Unit
- 8. Barge Slip
- 9. Dry Dock

Historical Features (Approximate)

- Landfill Area
- Tire Storage
- Historical Pit (1960s - 1970s)

IAC/IAI Boundaries

- IAC-1, Partially Buried Barge
- IAC-2, Boiler Barge and AST
- IAC-3, Barge Cleaning Surface Impoundments
- IAC-4, Historical Waste Storage
- IAC-5, Barge Cleaning Area Drainage
- IAC-6, Barge Slip
- IAC-7, Dry Dock
- IAI-1, Southern Wetland
- IAI-2, Land Area
- IAI-3, Land Area
- IAI-4, Land Area
- IAI-5, Barge Maintenance
- IAI-6, Northern Property Vessel Slip 1
- IAI-7, Northern Property Vessel Slip 2
- IAI-8, Offsite Wetland
- Property Line

200 100 0 200

Scale In Feet

June 2019 Co-Located Sediment/Pore Water Sample Locations for PAH Analysis with 2018 Surface Sediment (0.0-0.5 ft) PAH ESBTUFCV,34 Values SBA Shipyard, Jennings, LA

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FIGURE 5

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Attachment 1

Attachment 1

Third Quarter Groundwater Analytical Results - May 2019
SBA Shipyard PRP Site
Jennings, Jefferson Davis Parish, Louisiana

Chemical Name	SBA Shipyard Site-Specific Human Health Groundwater Screening Level (µg/l or mg/L)	Human Health Groundwater Screening Level Source	IAC-3 MW-01 5/7/2019 IAC-3-MW-01	IAC-3 MW-03 5/8/2019 IAC-3-MW-03	IAC-3 MW-04 5/7/2019 IAC-3-MW-04	IAC-3 MW-05 5/8/2019 IAC-3-MW-05	IAC-3 MW-06 5/7/2019 IAC-3-MW-06	IAC-3 MW-08 5/8/2019 IAC-3-MW-08	IAC-5 MW-09 5/7/2019 IAC-5-MW-09	IAC-4 MW-10 5/7/2019 IAC-4-MW-10	IAC-4 MW-11 5/7/2019 IAC-4-MW-11	IAC-4 MW-12 5/7/2019 IAC-4-MW-12	IAI-4 MW-13 5/7/2019 IAI-4-MW-13	IAI-5 MW-14 5/7/2019 IAI-5-MW-14	IAI-5 MW-15 5/7/2019 IAI-5-MW-15
Chloroform	0.22	c*; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
Chloromethane	19	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
cis-1,2-Dichloroethylene	3.6	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	1 U	1 U	1 U	1 U	1 U	6	10 U	1 U	10 U	10 U	1 U	10 U	10 U
cis-1,3-Dichloropropene	--		1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
Cyclohexane	1300	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	5 U	5 U	5 U	5 U	5 U	6	50 U	5 U	50 U	50 U	5 U	50 U	50 U
Dibromochloromethane	0.87	c*; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
Dichlorodifluoromethane	20	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
Ethylbenzene	1.5	c*; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	1 U	1 U	1 U	1 U	1 U	22	10 U	1 U	10 U	10 U	1 U	10 U	10 U
Isopropylbenzene (Cumene)	45	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	5 U	5 U	5 U	5 U	5 U	2	50 U	5 U	50 U	50 U	5 U	50 U	50 U
M,P-Xylene	--		5 U	5 U	5 U	5 U	5 U	3	50 U	5 U	50 U	50 U	5 U	50 U	50 U
Methyl Acetate	2000	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	50 U	50 U	5 U	50 U	50 U
Methyl Ethyl Ketone (2-Butanone)	560	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U	100 U	100 U	10 U	100 U	100 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	630	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U	100 U	100 U	10 U	100 U	100 U
Methylcyclohexane	--		5 U	5 U	5 U	5 U	5 U	4	50 U	5 U	50 U	50 U	5 U	50 U	50 U
Methylene Chloride	11	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
O-Xylene (1,2-Dimethylbenzene)	19	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	1 U	1 U	1 U	1 U	1 U	1	10 U	1 U	10 U	10 U	1 U	10 U	10 U
Styrene	120	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	50 U	50 U	5 U	50 U	50 U
Tert-Butyl Methyl Ether	14	c*; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	1 U	16	1 U	18	1 U	3	10 U	1 U	10 U	10 U	1 U	10 U	10 U
Tetrachloroethylene (PCE)	4.1	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	0.2	10 U	10 U
Toluene	110	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	5	10 U
trans-1,2-Dichloroethene	36	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	1 U	1 U	1 U	1 U	1 U	0.7	10 U	1 U	10 U	10 U	1 U	10 U	10 U
trans-1,3-Dichloropropene	--		1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
Trichloroethylene (TCE)	0.28	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
Trichlorofluoromethane	520	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
Vinyl Chloride	0.019	c; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U

Attachment 1

Third Quarter Groundwater Analytical Results - May 2019
SBA Shipyard PRP Site
Jennings, Jefferson Davis Parish, Louisiana

Chemical Name	SBA Shipyard Site-Specific Human Health Groundwater Screening Level (µg/l or mg/L)	Human Health Groundwater Screening Level Source	Sample Investigation Area	IAC-3	IAC-3	IAC-3	IAC-3	IAC-3	IAC-3	IAC-5	IAC-4	IAC-4	IAC-4	IAI-4	IAI-5	IAI-5
			Sample Location ID	MW-01	MW-03	MW-04	MW-05	MW-06	MW-08	MW-09	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15
			Sample Date	5/7/2019	5/8/2019	5/7/2019	5/8/2019	5/7/2019	5/8/2019	5/7/2019	5/7/2019	5/7/2019	5/7/2019	5/7/2019	5/7/2019	5/7/2019
			Sample Name	IAC-3-MW-01	IAC-3-MW-03	IAC-3-MW-04	IAC-3-MW-05	IAC-3-MW-06	IAC-3-MW-08	IAC-5-MW-09	IAC-4-MW-10	IAC-4-MW-11	IAC-4-MW-12	IAI-4-MW-13	IAI-5-MW-14	IAI-5-MW-15
GENERAL CHEMISTRY (mg/L)																
Total Organic Carbon	--			0.97	9.4	0.68	2.7	2.2	5.8	128	28.5	59.4	186	1.8	218	118
Total Dissolved Solids (Residue, Filterable)	--			1280	1440	1040	1260	861	1180	637	859	786	630	1510	948	1930
METALS (mg/L)																
Aluminum	2	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.300 U	0.300 U	0.300 U	0.300 U	0.300 U	3.31	3.06	2.65	0.300 U	0.670	0.300 U	1.24	0.300 U
Antimony	0.00078	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.0136	0.0500 U	0.0129	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U
Arsenic	0.000052	c*; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.0500 U	0.0823	0.0500 U	0.0500 U	0.0500 U	0.0323	0.0206	0.0500 U	0.0500 U	0.0256	0.0500 U	0.0200	0.0425
Barium	0.38	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.549	0.606	0.520	0.890	0.167	0.921	0.313	0.0468	1.00	0.221	0.920	0.695	0.827
Beryllium	0.0025	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0042	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Cadmium	0.00092	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0018
Calcium	--			118	143	111	125	23.7	168	64.1	28.4	70.6	6.89	95.1	35.5	104
Chromium, Total	--			0.0150 U	0.0150 U	0.0150 U	0.0150 U	0.0150 U	0.0150 U	0.0155	0.0086	0.0150 U	0.0112	0.0150 U	0.0148	0.0150 U
Cobalt	0.0006	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.0050 U	0.0024	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0079	0.0416	0.0016	0.0105	0.0050 U	0.0164	0.0182
Copper	0.08	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.0200 U	0.0102	0.0200 U	0.0110	0.0200 U	0.0170	0.0200 U	0.0205	0.0200 U	0.0200 U	0.0093	0.0103	0.0200 U
Iron	1.4	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.0414	4.37	0.375	0.200 U	0.550	8.18	44.6	8.26	31.4	58.3	1.02	68.8	46.2
Lead	0.015	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.0150 U	0.0150 U	0.0150 U	0.0150 U	0.0150 U	0.0086	0.0150 U	0.0150 U	0.0150 U	0.0117	0.0150 U	0.0074	0.0150 U
Magnesium	--			60.2	82.9	40.0	79.9	17.1	70.6	9.44	26.1	35.9	10.1	35.7	27.5	83.1
Manganese	0.043	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.0346	3.31	0.0401	0.696	0.207	0.734	0.765	2.44	2.17	0.490	0.220	2.30	1.85
Mercury	0.000063	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.000053	0.00020 U	0.00020 U	0.00020 U	0.00020 U	0.00020 U	0.00020 U	0.00020 U	0.00020 U	0.00020 U	0.00020 U	0.00020 U	0.00020 U
Nickel	0.039	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0040	0.0144	0.0462	0.0047	0.0299	0.0100 U	0.0237	0.0088
Potassium	--			2.04	3.06	2.22	1.94	0.730	5.21	1.25	1.93	7.35	0.641	0.943	3.09	0.886
Selenium	0.01	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0212	0.0500 U
Silver	0.0094	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U
Sodium	--			428	333	269	268	320	202	106	143	129	68.6	442	133	482
Thallium	0.00002	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.0300 U	0.0300 U	0.0300 U	0.0300 U	0.0300 U	0.0300 U	0.0300 U	0.0149	0.0300 U	0.0300 U	0.0300 U	0.0300 U	0.0300 U
Vanadium	0.0086	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0072	0.0282	0.0100 U	0.0100	0.0215	0.0100 U	0.0283	0.0057
Zinc	0.6	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.0200 U	0.0035	0.0031	0.0200 U	0.0200 U	0.0095	0.0107	0.170	0.0047	0.0267	0.0040	0.0099	0.0134
SEMIVOLATILE ORGANIC COMPOUNDS-SIM (µg/l)																
Acenaphthene	53	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	30	0.05 U	0.05 U	10	0.05 U	0.05 U	0.4	0.05 U
Acenaphthylene	100	Q; LDEQ RECAP 2003 GWSS		0.02	0.05 U	0.05 U	0.05 U	0.05 U	1	0.05 U	0.05 U	0.7	0.05 U	0.05 U	0.08	0.05 U
Anthracene	180	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.04	0.1	0.1	0.1	0.6	0.1	0.09	0.03	8	0.2	0.08	0.8	0.06
Benzo[a]anthracene	0.03	c; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.02	0.05 U	0.05 U	0.05 U	0.05 U	0.2	0.05 U	0.05 U	0.3	0.05 U	0.02	0.1	0.05 U
Benzo[a]pyrene	0.025	c*; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.02	0.05 U	0.05 U	0.05 U	0.05 U	0.1	0.05 U	0.05 U	0.2	0.05 U	0.05 U	0.08	0.05 U
Benzo[b]fluoranthene	0.25	c; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.04	0.05 U	0.05 U	0.05 U	0.05 U	0.2	0.05 U	0.05 U	0.2	0.05 U	0.05 U	0.08	0.05 U
Benzo[g,h,i]perylene	--			0.04	0.05 U	0.05 U	0.05 U	0.05 U	0.04	0.05 U	0.05 U	0.1	0.05 U	0.05 U	0.06	0.05 U
Benzo[k]fluoranthene	2.5	c; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.02	0.05 U	0.05 U	0.05 U	0.05 U	0.07	0.05 U	0.05 U	0.08	0.05 U	0.05 U	0.04	0.05 U
Chrysene	25	c; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.02	0.05 U	0.05 U	0.05 U	0.05 U	0.1	0.05 U	0.05 U	0.3	0.05 U	0.04	0.1	0.05 U
Dibenz(A,H)Anthracene	0.025	c; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.08 U	0.02	0.07 U	0.07 U	0.07 U	0.07 U
Fluoranthene	80	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.03	0.01	0.05 U	0.05 U	0.01	8	0.02	0.01	3	0.02	0.7	0.7	0.03
Fluorene	29	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.5	0.05 U	0.05 U	7	0.05 U	0.05 U	0.7	0.05 U
Indeno(1,2,3-C,D)Pyrene	0.25	c; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.04	0.05 U	0.05 U	0.05 U	0.05 U	0.04	0.05 U	0.05 U	0.1	0.05 U	0.05 U	0.06	0.05 U
Naphthalene	0.17	c**; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.08 U	7	0.07 U	0.07 U	1	0.07 U
Phenanthrene	180	N; LDEQ RECAP 2003 GWSS		0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.3	0.07 U	0.08 U	10	0.07 U	0.1	1	0.07 U
Pyrene	12	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		0.04	0.01	0.05 U	0.05 U	0.01	4	0.05 U	0.05 U	1	0.05 U	0.4	0.4	0.02
VOLATILE ORGANIC COMPOUNDS (µg/l)																
1,1,1-Trichloroethane	800	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
1,1,2,2-Tetrachloroethane	0.076	c; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	1000	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U	100 U	100 U	10 U	100 U	100 U
1,1,2-Trichloroethane	0.041	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
1,1-Dichloroethane	2.8	c; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
1,1-Dichloroethene	28	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
1,2,3-Trichlorobenzene	0.7	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	50 U	50 U	5 U	50 U	50 U
1,2,4-Trichlorobenzene	0.4	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	50 U	50 U	5 U	50 U	50 U
1,2-Dibromo-3-Chloropropane	0.00033	c; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	50 U	50 U	5 U	50 U	50 U
1,2-Dibromoethane (Ethylene Dibromide)	0.0075	c; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
1,2-Dichlorobenzene	30	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		5 U	5 U	5 U	5 U	5 U	4	50 U	5 U	50 U	50 U	5 U	50 U	50 U
1,2-Dichloroethane	0.17	c**; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
1,2-Dichloropropane	0.82	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
1,3-Dichlorobenzene	10	Q; LDEQ RECAP 2003 GWSS		5 U	5 U	5 U	5 U	5 U	0.6	50 U	5 U	50 U	50 U	5 U	50 U	50 U
1,4-Dichlorobenzene	0.48	c; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		5 U	5 U	5 U	5 U	5 U	2	50 U	5 U	50 U	50 U	5 U	50 U	50 U
2-Hexanone	3.8	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U	100 U	100 U	10 U	100 U	100 U
Acetone	1400	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		1	20 U	20 U	20 U	20 U	1	200 U	1	40	200 U	20 U	27	200 U
Benzene	0.46	c**; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		1 U	1 U	1 U	1 U	1 U	5	10 U	1 U	10 U	10 U	1 U	10 U	10 U
Bromochloromethane	8.3	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	50 U	50 U	5 U	50 U	50 U
Bromodichloromethane	0.13	c; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
Bromoform	3.3	c*; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		4 U	4 U	4 U	4 U	4 U	4 U	40 U	4 U	40 U	40 U	4 U	40 U	40 U
Bromomethane	0.75	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
Carbon Disulfide	81	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	50 U	50 U	5 U	50 U	50 U
Carbon Tetrachloride	0.46	c*; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U
Chlorobenzene	7.8	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		1 U	1 U	1 U	1 U	1 U	57	10 U	1 U	3	10 U	1 U	10 U	10 U
Chloroethane	2100	n; USEPA RSLs (THQ=0.1) for Tapwater Nov. 2018		1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	10 U	10 U